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METRO TORONTO

REMEDIAL ACTION PLAN

Draft Discussion Paper On Remedial Options

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paper

Executive Summary

Remedial Action Plan
Plan d'Assainissement

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ON

REMEDIAL OPTIONS

EXECUTIVE SUMMARY

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INTRODUCTION

Environment Ontario and Environment Canada are working with the public to jointly develop a clean up or Remedial Action Plan (RAP) that will take an ecosystem approach to restore water quality and protect the aquatic environment of the Metro Toronto waterfront and watersheds. As part of the ongoing consultation process a Draft Discussion Paper on Remedial Options is being circulated for public comment.

Additional information on the RAP is available in the Stage 1 Report: Existing Conditions and Problem Definition, Executive Summary, and through the RAP Goals as established by the Public Advisory Committee (PAC). These two documents also should be consulted during the selection of preferred options.

Release of the draft options paper is intended to provide information on options, stimulate debate, and generate suggestions on how to improve or supplement the options. Discussions relating to option selection, prioritization, scheduling and financing will continue during the entire RAP process so that the remedial options selected meet the RAP goals established by the PAC.

FORMAT

This Executive Summary describes the seven remedial intents outlined in detail in the Draft Options Paper, and briefly discusses their remedial actions and component actions. The remedial intents have been drawn from the work of the Public Advisory Committee (PAC) and the Technical Advisory Committee (TAC). Each remedial intent contains a number of broad remedial actions expected to be necessary to accomplish the intent. Each component action represents a program which can be undertaken to achieve the remedial action. The component action sections contain an introduction, description of existing programs, potential program improvements with costs where available, description of potential benefits and dependent projects, monitoring and reporting requirements, discussion of implementation considerations, and potential delays. The integration of the intents, remedial actions and component actions provide for an ecosystem solution to cleaning up the Toronto watershed.

The Seven Remedial Intents are:

- Implement Specific Plans to Correct Localized Use Impairments
- Reduce the Impacts of Treated and Untreated Sanitary Sewage
- Reduce the Impacts of Dry Weather Sources
- Reduce the Impacts of Stormwater Runoff
- Increase Public Awareness and Public Involvement in Environmental Programs
- Foster Ecosystem Thinking Both Within and Outside the Metro Toronto RAP
- Conduct Research in Support of Short and Long Term RAP Implementation

It is anticipated that a balance of actions will be required in order for the RAP to produce an ecosystem approach. Just how far the RAP pursues each intent is a subject for discussion during the option selection process. Over the next several months the PAC and TAC will discuss the options paper and consider option selection and prioritization. There will be numerous opportunities for you to become involved in this process.

The options paper is approximately 350 pages long. While the RAP must be an integration of all seven intents, each section can be made available for those who wish to focus their comments. Comments on the entire document or any remedial intent are welcome.

Everyone is encouraged to participate in the RAP process. If you are interested in receiving the RAP Goals, the Stage I report, the draft options paper, or wish to submit comments on any of these, please contact:

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For information on the Public Advisory Committee or participation in the consultation process contact:

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SUMMARY OF REMEDIAL INTENTS

The seven Remedial Intents and the actions included in each are discussed briefly below.

#1 IMPLEMENT SPECIFIC PLANS TO CORRECT LOCALIZED USE IMPAIRMENTS

OBJECTIVE: To identify for special consideration, projects or programs that can produce measurable improvements rapidly or that affect a well-defined geographic area.

Summary of Problem: There are many sources of contaminants affecting the Metro Toronto waterfront. They include: local point sources such as discharges from water pollution control plants and sewers; non-point sources such as lakefilling activities, sediment resuspension, and the air; and discharges to Lake Ontario from non-local sources such as the Niagara River.

Remedial Intent: This Remedial Intent addresses specific pollution problems that have been identified, as well as their causes. It includes remedial measures under way or ready for implementation, that are aimed at improving water quality in specific geographic areas where a limited number of pollution sources have reduced people's ability to use the water, such as the beaches. Because these projects focus on limited geographic areas they have the potential to restore use in the short-term.

Remedial Actions: Remedial actions necessary to achieve this remedial intent include: Continue Implementation of Projects Under Way (1.1); Implementation of Projects which have been Previously Recommended (1.2); Continue Special Provincial Funding Programs to Encourage Implementation of Water Quality Improvement Projects (1.3); and Continue Enforcement and Development of Lakefilling Controls (1.4).

Component Actions: The following chart details the component actions for remedial actions (1.1) - (1.4).

Understanding how certain options relate to other options is critical to providing an effective ecosystem program. In this intent, certain options depend upon the selection of component actions in another remedial intent. For example, remedial actions (1.1) and (1.2) contain component actions that would require expansion of the Sewage Treatment Plants which is addressed in remedial action (2.1). Specifically, to provide improvement to the entire Eastern Beaches waterfront, phase 2 of the Eastern Beaches tanks (1.1.1) is required, which in turn requires expansion at the Main Treatment Plant so the contents of the tank can be discharged to the plant. If combined sewer overflow (CSO) is to be treated to improve water quality along the western beaches (1.2.1), expansion of the Humber plant is required. Since lakefilling is needed for certain processes at the Main plant to be expanded, the form of the Lakefill Policy (1.4.2.) will affect certain projects at that plant.

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Remedial Intent # 1
Implement Specific Plans to Correct Localized Use Impairments

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
Remedial Action # 1.1 : Continue Implementation of Projects Under Way								
1.1.1 (pg. 1-3)	Eastern Beaches Tanks	Toronto	Toronto MOE	Phase 1 (2250 m3 tank) underway	\$ 4.4 million	Phase 2 (16,000 m3 tank) scheduled for 1992	\$ 10 million	- Subject to Class EA - Project dependent upon Main STP expansion
1.1.2 (pg. 1-6)	Staged Diffuser	Toronto	Toronto MOE	on hold	---	Phase 1 (staged diffuser) Phase 2 (re-circulation)	\$ 1.0 million \$ 0.6 million	- Subject to Class EA - MOE has withdrawn funding support
Remedial Action # 1.2 : Initiate Implementation of Projects Which Have Been Previously Recommended								
1.2.1 (pg. 1-9)	Western Beaches Remediation	Toronto Metro	Toronto Metro MOE	Preliminary Studies Completed	---	see other component actions sealing breakwell and treatment CSO and storm retention	--- \$ 30-75 million see Component Action # 2.2.1	- remediation requires large scale action - conceptual proposal only - dependent upon: STP capacity and CSO policy
Remedial Action 1.3 : Continue Special Provincial Funding Programs to Encourage Implementation of Water Quality Improvement Projects								
1.3.1 (pg. 1-16)	WWQIP	MOE Mun.	MOE Mun.	Existing (Metro mun. only)	variable \$ 50 M (1984-1988)	Expand Scope to Regions	not costed	- 50/50 funding program applicable to Metro municipalities only - expansion to regions may reduce funds available to Metro
1.3.2 (pg. 1-24)	Lifelines	MOE Mun.	MOE Mun.	Existing	variable	Deferred pending completion of Component Action # 7.1.5	---	- program applicable to entire province
Remedial Action 1.4 : Continue Enforcement and Development of Lakefilling Controls								
1.4.1 (pg. 1-31)	Lakefill Quality	MTRCA MOE	Self Supporting	Existing (new program begun in 1989)	\$ 415 K (1989)	Revise Fee Structure Increase Inspection Improve Operational Efficiency Increase Education Operational Research Upgrade Equipment	0 0 not costed not costed \$ 100 K \$ 50 K	- New programs initiated in 1989 - Program designed to be self-supporting; costs provided do not include increased costs to users
1.4.2 (pg. 1-39)	Lakefill Policy	MOE	MOE	Under Development	---	Deferred pending release of discussion paper on policy	---	- policy development to receive public input
1.4.3 (pg. 1-44)	Dredge Spoil Disposal	MOE	MOE	Guidelines exist (1976 version)	---	Update Handbook	---	- revised handbook expected in 1990
1.4.4 (pg. 1-47)	Contaminated Sediments	MOE	MOE	Underway	---	Remedial measures to be developed after sediment quality guidelines finished; Emphasis for now on control of sources.	---	draft sediment Quality Guidelines in 1990

#2 REDUCE IMPACTS OF TREATED AND UNTREATED SANITARY SEWAGE

OBJECTIVE: To reduce impacts of raw or diluted sewage from combined sewer overflows or storm sewers and treated sewage from the sewage treatment plants.

Summary of Problem: The Metro Toronto region rivers and Lake Ontario receive discharges of treated sanitary sewage from sewage treatment plants, diluted or partially treated discharges from treatment plant by-passes and combined sewer overflows, and raw sewage from storm sewers containing sanitary cross connections. In addition, in wet weather treatment plant and sewer capacities can be exceeded, resulting in basement flooding which causes a health hazard.

Remedial Intent: This Remedial Intent concentrates on problems related to the sanitary sewage system. Three main problem areas are addressed: elimination of residential sources of bacterial contamination; sewage treatment plant improvements; and reduction of industrial sources of chemicals discharged to the sewage treatment plants. The projects or programs will reduce the amount of untreated human waste entering our water and reduce the amount of chemicals released to Lake Ontario. The programs take a long time to implement.

Remedial Actions: Remedial actions in this intent include: Expand and Improve Sewage Treatment Plants (2.1); Reduce Sanitary Discharge from Storm Sewer Outfalls and Overflow Points (2.2); and Implement the Municipal Industrial Strategy for Abatement (MISA) Regulations (2.3).

Component Actions: The following chart details the component actions for remedial actions (2.1) - (2.2).

In this intent, two of the three remedial actions are closely related and will require some level of joint implementation to achieve the objective of this intent. How far each component action is taken is open to discussion, but it should be understood that as in remedial intent #1, selection of certain options in this intent are dependent upon selection of other options.

Remedial action (2.1) contains four components (2.1.1)-(2.1.4) addressing sewage treatment plant improvements at Metro's four treatment plants. Plant expansions will be required if combined sewer overflow treatment, ie. remedial action (2.2), is to be implemented.

Expansion of the Main treatment plant (2.1) requires lakefilling, and retirement of the North Toronto Treatment plant (2.1.4) would require expansion of trunk sewers and the Main plant. All plant expansions are subject to class environmental assessment (EA) and projected budgets and schedules are dependent upon completion of these EAs.

The magnitude of costs associated with this intent are substantial and will effect agency's ability to undertake other actions.

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Remedial Intent # 2
Reduce the Impacts of Treated and Untreated Sanitary Sewage

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
Remedial Action # 2.1 : Expand and Improve Sewage Treatment Plants								
2.1.1 (pg. 2-2)	Main STP Improvements	Metro	Metro Province	Five year plan -Efficiency -Capacity reserve development -Regulatory -Other TOTAL	(1989-1993) \$ 44.6 mill. \$ 73.9 mill. \$ 41.6 mill. \$ 86.4 mill. \$ 43.8 mill. \$ 290 mill.	Future Plans beyond 1994 Completion of projects Secondary treatment expansion Tertiary treatment (if required) Other TOTAL	 \$ 93.5 mill. \$ 325 mill. \$ 474 mill. \$ 238 mill. \$ 1.13 billion	Class EA for expansion underway Expansion requires lakefilling Expansion necessary if treatment of CSO or retirement of North Toronto STP to be considered Metro has assumed 33% provincial grant in budgeting (all STPs)
2.1.2 (pg. 2-21)	Humber STP Improvements	Metro	Metro Province	Five year plan -Efficiency -Capacity Reserve -Other TOTAL	(1989-1993) \$ 26.8 mill. \$ 21.4 mill. \$ 7.0 mill. \$ 55.2 mill.	Future plans beyond 1994 Completion of projects Tertiary Treatment(if required) TOTAL	 \$ 82 mill. \$ 89 mill. \$171 mill.	expansion subject to Class EA expansion does not require lakefilling expansion required if CSO treatment is to be considered
2.1.3 (pg. 2-27)	Highland Creek STP Improvements	Metro	Metro Province	Five year plan -Efficiency -Capacity reserve -Other TOTAL	(1989-1993) \$ 0.5 mill. \$ 34.9 mill. \$ 31.8 mill. \$ 67.3 mill.	Future plans beyond 1994 Completion of projects Secondary treatment expansion Tertiary treatment (if required) Other TOTAL	 \$ 35.6 mill. \$ 34.3 mill. \$ 38.8 mill. \$ 27.1 mill. \$ 135.2 mill.	expansion subject to Class EA expansion does not require lakefill no CSO treatment issue
2.1.4 (pg. 2-34)	North Toronto STP Improvements	Metro	Metro Province	Physical audit Underway	average of \$500K/yr for equipment replacement	Close plant and divert to Main STP (under study)* Upgrade to tertiary treatment(if not taken out of service)*	\$ 50.0 mill. not costed	retiring plant would require expansion of trunk sewers and Main STP Impact of plant on Don River is significant in dry weather, but not in wet weather (when runoff dominates)

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Remedial Intent # 2
Reduce the Impacts of Treated and Untreated Sanitary Sewage

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
Remedial Action # 2.2 : Reduce Sanitary Discharges from Storm Sewer Outfalls and Overflow Points (CSO)								
2.2.1 (pg 2-40)	Virtual Elimination of CSO	Metro Toronto East York York Scarborough	Metro Province Toronto, East York, York, Scarborough	Ongoing sewer separation	City of Toronto (1966-1983): \$182 million All Cities (1984-1989): \$ 29 million	Implement Metro's draft CSO Policy (over 20 years) Humber system Don system (includes lakefront) TOTAL	\$ 60.1 million \$ 319.5 million \$ 390 million	MOE has designated sewer separation a low priority for enhanced funding (low water quality benefit) tanks subject to Class EA implementation requires \$65 mill. expansion at Humber and \$89 mill. expansion at Main STP in addition to these costs assumes average control of 1 overflow per year CSO control alone will not be sufficient to open most beaches; Toxic load quantification underway
2.2.2 (pg. 2-50)	Illegal Sanitary Connections	Local Mun.	Local Mun. Province	Ongoing programs since 1984 (inside Metro)	Metro mun. \$ 285 K (1988)	Complete and terminate existing program inside Metro* Extend to Regions (1 cycle only)* Extend (continuing 10 year cycle)* All Properties checked (20 yr cycle)* Inspection as condition of sale*	\$ 9.6 mill. (over 34 years) \$ 21.8 mill. (over 20 years) \$ 21.8 mill. (over 10 years) \$ 63.1 mill. (over 20 years) \$ 17.2 mill. (over 10 years)	existing programs have low cost effectiveness (\$19,000/connection remedied in 1988) programs will remove sources of human pathogens, but in most cases will be insufficient to open beaches Enhanced funding (WWQIP: 50/50) applies only to Metro at present
2.2.3 (pg 2-64)	Sewer Use By-Laws	Reg. Mun. Local Mun. MOE	Reg. Mun. Local Mun.	Revised By-law being adopted	1988 Durham: 158 K Metro: 863 K Peel: 860 K York: 60 K	Increase Regional Enforcement). Increase Local Mun. Enforcement) Full By-Law Enforcement*	\$ 907 K/yr \$ 450 K/yr \$ 4.9 mill/yr	interim measure pending MISA sewer use regulations source control aimed at reducing load of toxics to environment see also Component Actions # 3.1.1, 3.1.2, and 3.1.3

#3 REDUCE THE IMPACTS OF DRY WEATHER SOURCES

OBJECTIVE: To reduce the discharge of contaminants to water courses and Lake Ontario under dry weather conditions.

Summary of the Problem: Dry weather discharges are primarily associated with storm sewers within urban areas. Many storm sewers discharge continuously because of ground water seeping into the pipes (infiltration). The water is often contaminated by accidental or intentional discharges from other sources as a result of cross connections, spills or because people pour chemicals down catchbasins or sinks and toilets. Outside of urban areas, agricultural activities contribute to dry weather loadings of bacteria, nutrients, herbicides and pesticides.

Remedial Intent: This remedial intent concentrates on problems related to dry weather discharges from industrial, residential, and agricultural sources. With the exception of agricultural programs, this section focuses on chemical rather than bacteriological contamination. Bacterial contamination from residential sources under dry weather conditions is discussed under Remedial Intent #2 which addresses contamination involving sanitary waste.

Remedial actions: Remedial actions in this intent include: Reduce Loads from Industrial Dry Weather Sources (3.1); Reduce Loads from Residential Dry Weather Sources (3.2); Reduce Loads from Agricultural Dry Weather Sources (3.3).

Component Actions: The following chart details the component actions for remedial actions (3.1) - (3.3).

In this intent there are few dependent projects, but it should be noted that a variety of projects are related, for example dry weather agriculture (3.1.2) relates to wet weather agriculture (4.1.5) and spills response (3.1.2) and industrial best management practices (3.1.3) are related to the sewer use by-law (2.2.3).

For the most part, the component actions in this intent are not alternatives, in that each addresses a different source of dry weather contamination. These sources should be prioritized in order to make decisions if resources are limited. There are alternative actions within component actions (3.1.1.) and (3.1.2). These are marked by an asterisk on the following chart. The costs associated with each of these are not additive, as only one alternative would likely be undertaken.

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Remedial Intent # 3
Reduce the Impacts of Dry Weather Sources

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
Remedial Action # 3.1 : Reduce Loads From Industrial Dry Weather Sources								
3.1.1 (pg. 3-1)	Illegal Industrial Connections	Reg. Mun.	Reg. Mun. MOE	Underway in Metro	\$ 266 K (Metro 1990 budget)	Priorize remaining sewer outfalls Extend Trace & Disconnect Programs to the Regions* End-of-Pipe Audit Sampling* Automatic Sampling*	see Component Action # 2.2.2 \$700 K over 5 years \$258 K/year \$235 K/year	\$1.3 million noted under Improvement C includes current Metro spending
3.1.2 (pg 3-9)	Spills Response	Reg. Mun. Local Mun. MOE	Reg. Mun. Local Mun. MOE (Spills Action Centre)	Existing but variable capability	Estimates: Durham: 90K/yr Metro: 600K/yr Peel: 160K/yr York: 96K/yr	Designated Response Staff Implement Model Sewer Use By-Law Develop Spills Response Program	\$ 0 see Component Action # 2.2.3 \$ 100K	Existing staff used; training increased through MOE programs Consultant study under way
3.1.3 (pg. 3-16)	Industrial BMPs	Reg. Mun. MOE	Reg. Mun.	Existing by-laws being revised	not available	Pilot Project (1990)	\$ 150K consultant study	joint Metro/MISA project most mun. are adopting revised by-law requiring industrial BMPs
Remedial Action # 3.2 : Reduce Loads from Residential Dry Weather Sources								
3.2.1 (pg 3-23)	Household Hazardous Contaminants	Reg. Mun.	Reg. Mun.	Existing (1989 programs)	Durham: 60K Metro: 1200K Peel: 500K York: 0	Expand programs in Durham and York Regions	Durham:\$315K/yr York: \$390K/yr	Programs expanding in Peel and Metro; emphasis on permanent drop-off facilities and residential pick-up service (in Metro)
Remedial Action 3.3 : Reduce Loads From Agricultural Dry Weather Sources								
3.3.1 (pg. 3-30)	Agricultural Dry Weather Controls	MTRCA OMAF MOE	OMAF MOE Reg. Mun. Local Mun.	OSCEPAP II (OMAF) Conservation Land Management (MTRCA) Rural Beaches (MOE)	- no estimate for RAP area - variable - \$ 225K (1986-1989)	Farm Remedial Action Plans Improve Financial Assistance Increase Education Develop Legislation Abatement	\$ 70 K/year for 5 years \$ 635-800 K (over 5 years) \$ 70 K/year \$ 200K/year* \$ 200k/year*	proposed increase in subsidy to 90% for a five year period; followed by enforced compliance through new legislation

#4 REDUCE THE IMPACTS OF STORMWATER RUNOFF

OBJECTIVE: To reduce the amount of contamination that occurs as a result of runoff from urban and rural lands.

Summary of the Problem: Wet weather discharges from storm sewers and overland flow contain high levels of contaminants which cause exceedences of Ontario's Provincial Water Quality Objectives and contribute to the contaminated sediment problems. Contaminated discharge is a primary source of bacteria to near shore waters and can adversely impact beaches and fisheries.

Remedial Intent: This intent focuses on contaminants that are mobilized during rainstorms or spring runoff. The best management practices seek to reduce the availability of these contaminants. Development of a program for stormwater quality control will supplement the best management practices by providing end-of-pipe control. The Basin Plans are in effect sub-RAPs, on a watershed scale, and provide overall integration of source control measures with stream enhancements. Since this intent focuses mainly on implementation or continued development of plans and policies also addressing whole ecosystems, it will require some level of actions in all of the remedial intents.

Remedial actions: Remedial actions in this intent include: Upgrade Municipal and Conservation Authority Best Management Practices (4.1); Implement River Basin Plans for Water Quality (4.2); Continue to Develop and Implement Policies and Guidelines for Stormwater Quality Control (4.3).

Component Actions: The following chart details component actions for remedial actions (4.1) - (4.3).

Stormwater quality control has not been practised historically and the costs of implementing controls in existing development will be very high, both in terms of dollars and in the potential loss of recreational areas. Existing technology can reduce the loads of contaminants delivered to our rivers. The contaminants do not disappear however and they must be disposed of. There is concern that stormwater quality ponds could become a source of contaminants to birds and animals.

Any system of stormwater control should be multi-faceted, seeking to reduce runoff on specific properties, as well as providing end-of-pipe treatment. Facilities should be multi-use and should seek to provide benefits beyond the simple removal of contaminants. Stormwater controls must be integrated with stream improvements and fisheries management in order to achieve maximum benefits. There are many ideas on how to accomplish all of this and there are some limited examples of applications in other jurisdictions. Implementation of stormwater quality control and basin management of water resources will require careful monitoring and continuing refinement in order to prevent errors and ensure maximum improvement and protection of our water.

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Remedial Intent # 4
Reduce the Impacts of Stormwater Runoff

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
Remedial Action # 4.1 : Upgrade Municipal and Conservation Authority Best Management Practices								
4.1.1 (pg. 4-2)	Improved Catchbasin Cleaning	Local Mun. Regional Mun.	Local Mun. Reg. Mun.	Existing Maintenance Programs	\$ 1.4 mill/yr	Annual Cleaning of all CBs* Annual + Selected Semi-Annual Cleaning* Semi-Annual Cleaning*	\$ 241 K/yr \$ 750 K/yr \$ 2.1 mill/yr	cost are over and above existing program costs goal is to maintain sump volume below 60% full; req'd frequency will be variable
4.1.2 (pg. 4-10)	Pet Control By-Law Enforcement	Local Mun.	Local Mun.	Existing By-laws	direct costs unavailable	Brochure/Public Information Stonger Legislation	not costed feasibility uncertain	programs ineffective in terms of water quality because of uncontrolled animal population
4.1.3 (pg. 4-14)	Sediment Control: Contruction Activities	Local Mun. MTRCA Province	Local Mun.	Guidelines Exist	---	Improve Enforcement Toughen Legislation Industry Education Improved Methods	\$ 200 K/yr --- --- ---	enforcement is inadequate and is the key required action; municipal responsibility for enforcement is important
4.1.4 (pg. 4-19)	Erosion Control	MTRCA	Province Municipality	Existing Program	\$ 6.9 mill. (1979-1989)	Increase funding for current priority sites Target sediment generating sites Eliminate private contributions Use techniques which are more environmentally sensitive	\$ 500-700 K/yr \$ 700-1000 K/yr \$ 25-30 K/yr project specific	Current program is aimed at hazard/damage reduction - not sediment reduction Prioritization to target sediment control requires a new program Small scale sediment control also addressed under Component Action 5.4.1
4.1.5 (pg. 4-25)	Improve Agricultural Controls	OMAF MTRCA	OMAF MTRCA MOE	see Component Action 3.3.1	see Component Action 3.3.1	Barnyard/Manure Storage System Improvements Barnyard Water Diversion	\$ 2.1-4.3 mill. over 5 years \$ 1.1-2.1 mill. over 5 years	see Component Action 3.3.1 for additional improvements and costs Costs are over and above existing subsidy programs and assume proposed 90% funding

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Remedial Intent # 4
Reduce the Impacts of Stormwater Runoff

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
Remedial Action # 4.2 : Implement River Basin Plans for Water Quality								
4.2.1 (pg. 4-36)	Humber River	Local Mun. Reg. Mun. MTRCA Province	Local Mun. Reg. Mun. MTRCA Province	Plan released in 1986; programs ongoing	refer to specific Component Actions	Upgrade plan to ensure consistency with other plans Resolve proponentcy, ownership issues Municipal-chaired Implementation Committee Hire Individual River Basin Coordinators	no cost resolved for Humber pilot site Metro-chaired Committee formed \$ 325 K/yr for 5 basin coordinators	improvements and costs are listed under Component Actions Metro-chaired committee functions as a subcommittee of the RAP Costs provided for basin coordinators are for entire RAP area
4.2.2 (pg. 4-47)	Don River	Local Mun. Reg. Mun. MTRCA Province	Local Mun. Reg. Mun. MTRCA Province	Strategy released Sept. 1989	refer to specific Component Actions	Prepare management plan Resolve issues as per Humber Implementation Committee River Basin Coordinator	--- --- --- see Humber River	Don strategy contains a range of actions based on desired level of protection; costs could range up to \$ 1 billion over 10-20 years for highest level Selection of desired level of protection referred to RAP
4.2.3 (pg. 4-60)	Rouge River	Local Mun. Reg. Mun. MTRCA province interest groups	Local Mun. Reg. Mun. MTRCA province	Draft Strategy released 1989	not determined as yet	Determine Costs and Seek Commitments Implementation Committee River Basin Coordinator	--- --- See Humber River	Rouge approach represents "state-of-the-art" in basin strategy development; strategy needs to be converted into a plan with costs, schedules, and commitments
Remedial Action # 4.3 : Continue to Development and Implement Policies and Guidelines for Stormwater Quality Control								
4.3.1 (pg. 4-71)	Stormwater Policy, Guideline, Manual Development	Province	Province	No Policy for stormwater quality	---	Develop a Policy/Regulation /Strategy for stormwater quality Develop CSO guidelines	internal resources internal resources	See also Comp. Action # 4.3.4 main issue is required staff resources for implementation of any policy developed

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Remedial Intent # 4
Reduce the Impacts of Stormwater Runoff

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
4.3.2 (pg. 4-80)	Pilot Stormwater Ponds Program	MOE Local Mun. Reg. Mun.	MOE Local Mun. Reg. Mun. Federal (possible)	Emery Cr. Recommended by TAWMS not yet initiated	\$ 1.4 mill. (1985 dollars)	Fund up to six pilot projects over next 3 years Establish multi-agency pilot project implementation teams (NGO participation proposed)	\$ 11 mill. (over 3 years) no cost	demonstration/research projects in different municipalities possible federal funding to be determined based on research orientation of projects
4.3.3 (pg. 4-88)	Leaded Fuel Regulations	Federal	Federal	Reduction in use is occurring	---	Elimination of most leaded fuel by Dec. 1990	---	may significantly reduce lead (one of the main contaminants) in stormwater runoff
4.3.4 (pg. 4-92)	Long Range Stormwater Quality Strategy	Province Local Mun. Reg. Mun. MTRCA	Local Mun. Reg. Mun. Province	Urban Drainage Management Program	---	Apply Interim Stormwater Quality Guidelines to new dev. Conduct PCP studies to Prioritize "retro-fit" sites Apply Stormwater Quality control to redevelopment Retro-fit existing problem sites	staff resources to be determined; capital costs - developer \$ 2 mill. capital costs borne by developer to be determined	currently no commitment by any agency to full scale stormwater quality program major new staff resource commitment required Projected costs for "retrofit" sites is in the billions of \$ Recommended thrust: new development & redevelopment

#5 INCREASE PUBLIC AWARENESS AND PUBLIC INVOLVEMENT IN ENVIRONMENTAL PROGRAMS

OBJECTIVE: To keep people informed of environmental conditions and problems, develop a basis for ongoing broad community support for RAP implementation, and promote public participation in environmental programs.

Summary of the Problem: Remedial action plans should be community based and involve the public in both the development and implementation of the plan. This is particularly important to the Metro Toronto RAP because the majority of the problems are caused more by people than by industry. Efforts have been made to involve concerned citizens, interest groups, and agency officials. To ensure that additional ideas and potential actions will be generated for selection of options and inclusion in the RAP, continued effort is required.

Remedial Intent: This intent focuses on increasing public involvement and participation in programs and public access to information available on the environment and the RAP.

Remedial actions: Remedial actions in this section include Increase Public Access to Studies and Reports on the Environment and the Metro Toronto RAP (5.1); Establish a Foundation to Fund Local Initiatives (5.2); Encourage Public Use of the Waterfront and Valleys and Increase Public Involvement in Aesthetic Clean-up Programs (5.3); and Implement Stream Improvement and Rehabilitation Projects Which Will Encourage Greater Public Pride in Their Rivers and the Waterfront (5.4).

Component Actions: The following chart details the component actions for remedial actions (5.1) - (5.3).

Public awareness and use of our aquatic resources are critical to the successful implementation of the RAP. The greater the value placed on these resources, the stronger the support for remediation. There are a variety of methods available to promote this, ranging from providing information to making river valleys a more pleasant place to visit and learn from both government agencies and public groups are active in helping to restore our watersheds. The RAP seeks to promote the growing cooperation between established agencies and non-governmental organizations so that the public can become a stronger resource in the clean-up effort. Continued discussion of the means of accomplishing this working relationship is sought.

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Remedial Intent # 5
Increase Public Awareness and Public Involvement in Environmental Programs

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
Remedial Action # 5.1 : Increase Public Access to Studies and Reports on the Environment and the Metro Toronto RAP								
5.1.1 (pg. 5-2)	RAP Communication Plan	Province	Province	RAP consultation ongoing	\$ 150 K/yr	Development of a Continuing RAP Communications Plan	\$ 75 K/yr	annual progress report newsletters news releases
5.1.2 (pg. 5-7)	RAP Library	Province Federal (possible)	Province Federal (possible)	RAP office, Royal Commission	---	Establish a Metro Toronto RAP Library* RAP Resource Facility in existing facility*	\$ 110 K/yr \$ 60 K/yr	stand alone facility with staff "piggy-back" onto existing facility; staff required but space donated
Remedial Action # 5.2 : Establish a Means of Providing Support to NGOs and Municipalities for Projects which Encourage Public Involvement								
5.2.1 (pg 5-12)	Foundation for Grants	Province	all implementing agencies and municipalities	federal and provincial programs exist but none are specific to the Toronto RAP	---	Foundation for Grants	\$ 150K/yr base budget provided by agencies and municipalities additional funds based on fund raising and innovative funding mechanisms	arms-length foundation operated by a board drawn from RAP implementers and the public aim would be to fund citizen sponsored projects or agency projects which are multi-use further development of the Component Action is required
Remedial Action # 5.3 : Encourage Public Use of the Waterfront and Valleys and Increase Public Involvement In Aesthetic Clean-up Programs								
5.3.1 (pg. 5-16)	Agency Clean-up Programs (SCOUR)	MTRCA	Province	Summer program operated since 1985	variable \$ 40-150 K/yr	Improve existing program funded under the Environmental Youth Corps* Establish separately funded program*	no additional cost \$ 100 K/yr	stream and river clean-up program operated voluntarily by MTRCA new program would require designation of an agency with a mandate for stream clean-up
5.3.2 (pg. 5-22)	NGO Clean-up Programs	Public Groups	Public Groups	Occasional Clean-up days	---	Deferred pending further consultation	---	Non government organizations conduct voluntary valley clean-up

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Remedial Intent # 5

Increase Public Awareness and Public Involvement in Environmental Programs

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
Remedial Action # 5.4 : Implement Stream Improvement and Rehabilitation Projects Which Will Encourage Greater Public Pride in Their Rivers and Waterfront								
5.4.1 (pg. 5-24)	Agency Stream Improvement Programs	MTRCA, MNR	province, municipalities, private landowners	MTRCA/Mun. MNR Don R. (1989)	\$100 K/yr not available \$185 K	Upgrade existing programs	\$ 380 K in year 1 \$250 K/yr thereafter	Stream improvement includes small sediment control works, in-stream habitat work, and tree plantings.
5.4.2 (pg. 5-31)	NGO Programs	Public Groups	Grants, Private donations	Conservation Council Ont. Black Cr. Project	\$ 325 K approved from Environmental Partners Fund	Encourage NGOs with project orientaion	not costed	seek to establish NGO groups with project orientaion on other watersheds
						Involve NGOs on project implementation committees	no cost/volunteer time by NGOs	further discussion required regarding NGO resources
						Support NGO sponsored initiatives	to be determined	NGOs in process of negotiating matching funds

#6 FOSTER ECOSYSTEM THINKING BOTH WITHIN AND OUTSIDE THE METRO TORONTO RAP

OBJECTIVE: To provide opportunities for the public to participate in clean-up programs outside of the Metro Toronto RAP area and to encourage ecosystem management locally.

Summary of Problem: The Metro Toronto RAP requires an ecosystem approach to the management of aquatic resources. Pollution problems in the Metro Toronto area are not just the result of local sources. Therefore, the remedial efforts in other areas of concern are of interest.

Remedial Intent: This intent focuses on promoting opportunities which will foster "ecosystem thinking" both on a local basis, and in the broader context of the Great Lakes.

Remedial Action: Remedial actions in this intent are to: Encourage Public Awareness and Communication with Other RAPS (6.1); Ensure Toronto Public is Kept informed of Progress on Initiatives Outside the Toronto RAP Area (6.2); Upgrade the Level of Environmental Input to Planning Processes (6.3); and Ensure Greater Coordination of Planning on a Watershed Basis (6.4).

Component Actions: The following chart details component actions for remedial actions (6.1) - (6.4).

The component actions contained in this intent, more than any other, are conceptual in their content. Efforts have been made to initiate action but there is a continuing need for review and improvement of existing efforts. It is important to seek additional consultation in order to determine if there are other component actions that could be included.

A unique opportunity presents itself for addressing the inter-governmental aspects which are so important in the successful attainment of an ecosystem approach to environmental management. The Royal Commission on the Future of the Toronto Waterfront (Crombie Commission) has a joint mandate from both the Canadian and Ontario governments to address the separate land use and environmental issues along the waterfront. This gives the Commission an unprecedented ability to promote its' objectives. The Commission has strongly endorsed an ecosystem approach to resource management. This augers well for the attainment of the RAP goals, to the extent that they reflect those of the Commission.

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Remedial Intent # 6
Foster Ecosystem Thinking Both Within and Outside the Metro Toronto RAP

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
Remedial Action # 6.1 : Encourage Public Awareness and Communications with Other RAPs								
6.1.1 (pg. 6-2)	Communication with other RAPs	RAP Program PACs	RAP Program PAC Budget	Conference Participation (RAP, PAC or IJC sponsored)	Approx. \$10K/yr (all RAPs)	Continue current RAP program Encourage PAC Submissions	— volunteer time	PAC reps expenses paid to attend RAP related conferences PACs can make submissions PAC budgets also fund expenses
6.1.2 (pg 6-5)	PAC Network	RAP program PACs	RAP Program PAC budgets	NGO networks, newsletters	---	Further discussion required	---	Currently non government organizations operate networks, provide newsletters, reports; RAP initiative should not duplicate
Remedial Action # 6.2 : Ensure Toronto Public is Kept Informed of Progress on Initiatives Outside the Toronto RAP								
6.2.1 (pg. 6-7)	Lake Ontario Toxics Management Plan	Canada, US, Ontario, New York	Canada, US, Ontario, New York	Feb. 1989 report Ongoing Program	---	Continue current research	---	a presentation was made to PAC in 1989 periodic briefings on progress are to be provided in future
Remedial Action # 6.3 : Upgrade the Level of Environmental Input to Planning Processes								
6.3.1 (pg. 6-13)	Royal Commission on the Future of the Toronto Waterfront	Federal Provincial	Federal Provincial	Interim Report (Aug. 1989) Hearings Ongoing	---	Support efforts of the Royal Commission and the Kanter Commission to further ecosystem management among all levels of government	---	Continue liaison with Royal Commission Seek to increase joint efforts to promote ecosystem mangaeement
Appendix A	Seminar Summary on input to planning processes			Two day seminar Feb/89	---	Continue to provide a forum for discussion	---	encourage discussion and action by agencies with a planning mandate
Remedial Action # 6.4 : Ensure Greater Coordination of Planning on a Watershed Basis								
6.4.1 (pg. 6-17)	MTRCA Greenspace Strategy	MTRCA	Province, Municipal	Greenspace Plan (Jan/89)	---	Oak Ridges Moraine Watershed Management Waterfront Outdoor Recreation	\$10 mill/yr \$0.3 mill/yr \$3.1 mill/yr \$1.9 mill/yr	Costs are for programs throughout MTRCA jurisdiction Many elements of Greenspace strategies are outside RAP mandate Plan represents an example of a single agency taking a lead in coordination on a watershed basis

#7 CONDUCT RESEARCH IN SUPPORT OF SHORT AND LONG TERM RAP IMPLEMENTATION

OBJECTIVE: To continue to increase knowledge of the local ecosystem and pollution sources in order to allow future improvements to the RAP and its implementation.

Summary of Problem: The RAP is intended to be a continuing process and it is necessary to continue research in order to improve the basis for future decision-making. Additional baseline data and the development of the tools necessary to conduct comprehensive monitoring also are needed in order to document future progress and gauge the effectiveness of any actions undertaken.

Remedial Intent: This remedial intent is intended to provide additional knowledge to improve the basis for future decision-making, as the RAP continues. While there is sufficient knowledge to begin remediation of many sources, information deficiencies remain. The research being conducted seeks to provide information which will be used to keep the RAP current and provide the most comprehensive basis for restoration possible.

Remedial Actions: Remedial actions include: Complete Studies Initiated Through the RAP in Order to Complete Information Base (7.1); and Complete Studies Initiated as a Result of Other Programs Which Will Be of Assistance to Rap Implementation or Decision-Making (7.2).

Component Actions: The following chart details component actions for remedial actions (7.1) - (7.2).

The studies listed under 7.2 have all been initiated during the development of the RAP because of information gaps. There is a need to establish the importance of storm sewers, combined sewer overflows and the atmosphere as sources of toxic chemicals. Without this information, needed resources might be committed to the clean-up of lesser pollution sources, simply because they are well documented. There is a need for additional information on the fate of toxics, on sediment and uptake by aquatic life. Only with this information can realistic restoration targets and time frames be established. Finally, there is a need for study of alternate methods of paying for clean-up so that implementation is not delayed through a lack of resources. Ongoing studies have been initiated by the province in support of its broader mandate for environmental protection. These studies will provide needed information in the future.

The timing of continued research is important to the option selection process. Some studies need to be completed before commitment is made to long range remedial efforts. Many actions are needed to effect restoration. The process of remediation should begin immediately, but in some cases it may be necessary to defer decisions on specific actions until more information becomes available.

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Remedial Intent # 7
Conduct Research in Support of Short and Long Term RAP Implementation

Component Action #	Description	Responsibility		Current Status		Potential Improvements	Costs	Comments
		Implementor	Funding	Programs	Costs			
Remedial Action # 7.1 : Complete Studies Initiated Through the RAP in Order to Complete the Information Base								
7.1.1 (pg. 7-4)	Toxic Contaminants Study	MOE	RAP	Under way	\$ 470 K (1988-89)	sample additional priority outfalls and tributary loads	\$ 260 K (1990)	toxic loads from storm sewers and CSO (due 1991)
7.1.2 (pg. 7-8)	Fate and Transport Modelling	Federal	RAP	Existing model for Main STP	---	upgrade model and improve loading estimates	\$ 85 K (1990)	dependent upon Toxic Contaminants Study
7.1.3 (pg. 7-11)	Sediment Study	MOE	RAP	Preliminary Studies Completed	---	electromagnetic conductivity monitoring	\$ 68 K	likely to be deferred because of budget constraints
7.1.4 (pg. 7-14)	Biomonitoring Research (1989)	MOE	RAP	Ongoing	---	exposure regimes for PCB's	---	combined with # 7.1.1 report due 1991
7.1.5 (pg. 7-16)	Funding Mechanisms Study	RAP Steering Committee	COA RAP (study only)	Under Development	---	modifications and additions to existing funding mechanisms	to be determined	report due July 1990; determine alternate funding options
7.1.6 (pg. 7-19)	Fish Community & Habitat Monitoring	MNR MTRCA	RAP (1989) MNR (future)	Year 1 field work complete	\$ 93 K	Continue 5 year program	1990-93 \$50K/yr 1994 : \$95K	continuation depends on MNR funding (status uncertain)
7.1.7 (pg. 7-22)	Monitoring/Airbourne Toxic Chemicals	MOE	RAP	Ongoing	---	Continue program; Station purchased in 1989	\$ 50 K/yr	Toxic loads from atmosphere needed for fate and transport modelling
Remedial Action # 7.2 : Complete Studies Initiated as a Result of Other Programs Which Will be of Assistance to RAP Implementation or Decision Making								
7.2.1 (pg. 7-25)	MISA (direct dischargers)	MOE	MOE Industry	Ongoing	variable by sector	---	---	provincial program to reduce discharge of toxic substances
7.2.2 (pg. 7-26)	MISA Pilot Site Toronto Main STP	MOE	MOE	Preliminary Studies Completed	---	---	---	MISA pilot site report expected in 1990
7.2.3 (pg. 7-27)	Contaminant Residue in Aquatic Biota (CRAB) Guidelines	MOE	MOE	Ongoing	\$ 10 K FY/1990-91	---	---	draft of procedures by autumn 1990
7.2.4 (pg. 7-29)	PWQO Revisions	MOE	MOE	Underway	\$ 429 K 10 man years	94 substances - FY 1989-90 46 substances - FY 1990-91	---	Provincial Water Quality Objectives (PWQO)

CONSULTATION NEEDS

In determining the contents of the Draft remedial action plan, the RAP team and its' committees are seeking answers to many questions. The more people who respond, the more likelihood the Draft RAP not only will be a complete document, but can reflect a community consensus, as well. This section poses questions that the RAP team would like answers to. Your responses and comments need not be restricted to answering these questions.

OVERALL APPROACH

In the forward to the Draft Discussion Paper on Remedial Options, the following questions are posed:

1. Do you agree with the Remedial Intent?
2. Do you agree that the Remedial Actions are necessary to achieve the Intent?
3. What is the relative importance of each Component Action?
4. Are there other actions which need to be considered?

The first three questions are posed to assist the reader in determining whether an ecosystem approach has been adequately applied. The last question provides the reader the opportunity to recommend specific additions or changes to each Intent so as to ensure that the RAP contains actions that provide an ecosystem answer to restoring and protecting water quality in the watershed.

The answer to the question of whether there are other actions to consider is crucial. Identification of additional actions early in the process will allow for all actions to be considered during the discussion of preferred options.

GENERAL QUESTIONS AND PRINCIPLES

1) One of the goals of the RAP is to ensure source control of pollution (eg. RAP Goal #6). Most of the remedial intents are based on this philosophy. Some "bandaid" type solutions are contemplated, however.

- Is the funding of "bandaid" type projects (for example, component action 1.1.2., which only deflects pollution instead of eliminating it at the source) warranted as a short-term solution if it restores a water use; or

- Should only the projects that provide final solutions be funded, even though it may take years for a water use to be restored?

2) Many practices that result in pollution are soon to be regulated by law. Should interim programs proceed before these regulations clearly define what practices are required and standard must be attained? (for example, MISA will require many actions proposed in the Sewer Use By-law section 2.2.3).

3. The RAP is developing under the philosophy of:

- prevention and protection first;
- remediation of active sources second;
- restoration of historic problems third;
- then improvements beyond restoration.

Do you agree with this approach? Is there another way to approach the clean up of the waterfront and watersheds?

4) Are there any proposed actions that you feel should not be taken?

Your answers to the questions in this section and any other comments you may wish to make are welcomed and will become part of the information used in the discussion of preferred options. If you wish to take part in these discussions, let us know. A process for incorporation of comment is to be developed in conjunction with the Public Advisory Committee in May.

Please send your responses and comments to Doug Andrews at the address shown on the second page of this document.

FUTURE CONSULTATION NEEDS: CONSIDERATIONS FOR OPTION IMPLEMENTATION

The Metro Toronto RAP soon will require "option selection". In most cases there is only one component action for addressing a specific problem or source of pollution. If no new action is taken, the problem remains, and is addressed by existing programs only.

Therefore, the selection process for these options should viewed in terms of priority and timing. This is especially relevant to the actions under Intents 2,3, and 4 which require large resource commitments.

a) In most cases, timing of implementation will be targeted according to the following:

- initiate within 1 year
- initiate within 5 years
- initiate within 10 years
- defer pending completion of studies
- do not implement

b) Priorities should be established for addressing the main types of contamination (bacterial, toxic or conventional pollutants such as phosphorous) and corresponding use impairments (beach closures, fisheries, and aesthetics).

c) For Intent #7, the research identified is already under way. In some cases, the component actions recommended for achieving the other Intents (for example, contaminated sediment removal) should not be undertaken until the research is completed so that sound environmental management is ensured and a greater problem is not created. The need to finish research will affect when an action can be implemented.

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